nonsinusoidal current pulses" (claim 25); "adjustable nonsinusoidal current pulse signal" (claim 26); "nonsinusoidal current pulse signal...with the pulse having a rate of change which produces high frequency harmonics" (claim 27); and "a current pulse signal with high frequency harmonics" (claim 28). Thus, Applicant believes the designated species are not of particular relevance to the searching or examination of the present application.

However, in the interest of complying with the required species election, Applicant elects Figure 7 and believes that the following claims are readable upon the elected species: claims 1-17, 24, 26, 27, and 28.

Applicant also submits an Information Disclosure Statement with a copy of the International Search Report and Invitation to Pay Additional Search Fees which was mailed December 13, 2004 in a counterpart PCT International Application No. PCT/US2004/021533 (which claims priority on this application and U.S. Serial No. 10/884,851, filed July 2, 2004). Applicant will comment on the one reference said to be relevant: US Patent 5,847,370 to Sluka *et al.*

Applicant's invention relates to a signal for powering an inductive heating apparatus or an inductive heating method. The signal has been claimed as current pulses with high frequency harmonics. The advantages of utilizing Applicant's claimed signal include (for example) one or more of:

- the high frequency harmonics enhance the relative proportion of inductive heating (claim 2);
- the current pulses produce an increased amount of inductive heating compared to a resonance sinusoidal signal (claim 3);
- the current pulses produce an increased amount of inductive heating compared to a sinusoidal current of a same magnitude and same fundamental frequency (claim 4);
- the current pulses increase an inductive portion of heating in the article without increasing the root means square (RMS) current in the heater coil (claim 6);
- the power source can include a low or line frequency current source (claim 7).

As previously indicated, variations of Applicant's novel current pulse signal are described in the other independent claims 24-28.

In contrast, Sluka concerns a power supply 608 delivering a signal to a "tank circuit,"[1] where:

- "The frequency of current oscillations is essentially the same as the resonant frequency of the coils in combination with the tank capacitors..." (column 9, lines 6-8);
- "...the power supply delivers a frequency which optimizes power transfer into the workpiece given the tank capacitance and inductance" (column 9, lines 20-23);
- "The current output of the power supply 608 should be relatively continuous with low harmonic content (column 9, lines 24-25).

Thus, Sluka discloses a traditional tank circuit operation, where the goal of the power supply is to deliver a continuous (sinusoidal) resonant frequency signal which matches a specific resonant frequency of the tank circuit (column 9, lines 4-57).

Applicant has acknowledged such "resonant sinusoidal high frequency power supplies of the prior art inductive heating systems" in the present specification at paragraph 43. Applicant also distinguishes these from the presently claimed invention by reciting, for example, "current pulses," a non-continuous signal, and furthermore "current pulses with high frequency harmonics" as distinguished from a resonant frequency signal.

The International Search Report refers to column 9, lines 44-57 of Sluka. However, this section merely describes, in the context of Sluka's tank circuit operation, a refinement (of the actuation/deactivation of the power supply 608) in narrowing (or widening) a pulsed-width-modulated signal in order to achieve the "resonant frequency of the tank circuit" for the very reason that "the tank circuit does not respond to the higher frequency harmonics" (column 9, lines 51-52). Thus, Sluka filters out the high frequency harmonics – the exact opposite approach of Applicant's claimed invention.

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[1] A classic "tank circuit" is a coil across a capacitor. At its resonant frequency (the frequency at which the inductive reactance of the coil is equal to the capacitive reactance of the capacitor) it exhibits very high impedance across the coil-capacitor pair and very low impedance to any load placed in series with the coil and capacitor — thus generating a desired natural frequency.

Applicant requests the Examiner's consideration of the references noted in the enclosed IDS and requests that these references be made of record in the present application.

Applicant requests examination of this application under an expedited schedule in accordance with the granted Petition to Make Special.

Please note the change of correspondence address for Applicant's attorney filed herewith.

Respectfully submitted,

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